Parcel E-2 Landfill Gas Monitoring and EPA Split Sampling Report Recommendations

EPA Landfill Gas Split Sampling Event Report Summary

- In September 2012, EPA consultant conducted LFG sampling concurrent with Navy qtly LFG monitoring (Navy does not collect samples for lab analysis unless methane concentrations exceed 5% by volume or NMOC concentrations exceed 500 ppmv on the north side of the barrier wall)
- EPA collected samples from 9 locations (GMPs and PVs) for VOCs, NMOCs, TPH, atmospheric and organic gases, and H_2S.
- All methane and VOC data were below Navy project action levels.
- EPA had four recommendations for Navy.

EPA Recommendation 1

- "As part of the remedial design for the selected Parcel E-2 remedy, the Navy should conduct a comprehensive Parcel E-2 landfill gas study to test for and evaluate a broad range of likely landfill gas constituents using SUMMA™ canisters and Tedlar bags as appropriate, in addition to measurements using field screening instruments. EPA understands that the Navy does plan to conduct such a study in Spring 2013. Prior to finalization of the Parcel E-2 remedial design, the results of the Navy's 2013 landfill gas study should be compared with the results of this EPA study and integrated into the landfill gas collection and treatment system design."

EPA Recommendation 1 – Navy Response

- The results of this EPA study and the upcoming landfill gas study will be integrated into the design of the landfill gas collection and treatment system, including the monitoring plan and O&M plan.
  - The upcoming study is planned for summer 2013 and results will be provided in the draft final Remedial Design for Parcel E-2
- Laboratory analytical results (with corresponding field screen readings) to date will be reviewed to confirm that:
  - Broad NMOC detections continue to be identified and evaluated with sufficient consistency, both in the field and in the laboratory
  - Actual emission concentrations continue to remain below action levels, and these action levels remain protective of public health and will be applicable for the RD

EPA Recommendation 2

- “This split sampling event was conducted at a time selected three months or more in advance and did not necessarily correspond to conditions when the maximum amount of landfill gas would be generated (e.g., low atmospheric pressure and low wind conditions). It is recommended that the Navy study be conducted under conditions when the maximum amount of landfill gas would be generated.”

EPA Recommendation 2 – Navy Response

- The **generation rate** of landfill gas is generally **constant** over short durations (days to weeks). The **advection rates** of the landfill gas **vary** with the subsurface pressure gradients and are generally higher for surface emissions when:
  - the atmospheric pressure is lower (e.g., on warm afternoons)
  - the groundwater level is rising (e.g., incoming high tide)
- The landfill gas advection rates for lateral migration also increase when the ground surface gas permeability is reduced (e.g., after rain), although surface emissions generally decrease
- The landfill gas study will be conducted over a period of weeks to months. Within that study duration, confirmatory analytical sampling could be scheduled taking into account site conditions amenable to higher landfill gas advection rates. However, the optimal site conditions for maximum landfill gas advection rates are not always readily predictable or easily accommodated as a practical matter.

EPA Recommendation 3

- "As discussed in Section 4, the Navy's field sampling procedure uses a PID to measure landfill gases during quarterly monitoring and appears to under-estimate petroleum hydrocarbon concentrations. It is recommended that the Navy consider using a monitoring instrument that is more sensitive to hydrocarbons in addition to the PID. Further, it is recommended that since the PID is not sensitive to petroleum-related compounds, the Navy should collect samples in SUMMA™ Canisters at a reasonable frequency developed in coordination with the Regulatory Agencies, in additional to using field screening instruments so that a comparison between field instrument readings and laboratory data can be made. Samples should also be collected from the granular activated carbon (GAC) canister effluent ports of the passive and portable extraction systems and any future effluent stream from a landfill gas treatment system."

EPA Recommendation 3 – Navy Response

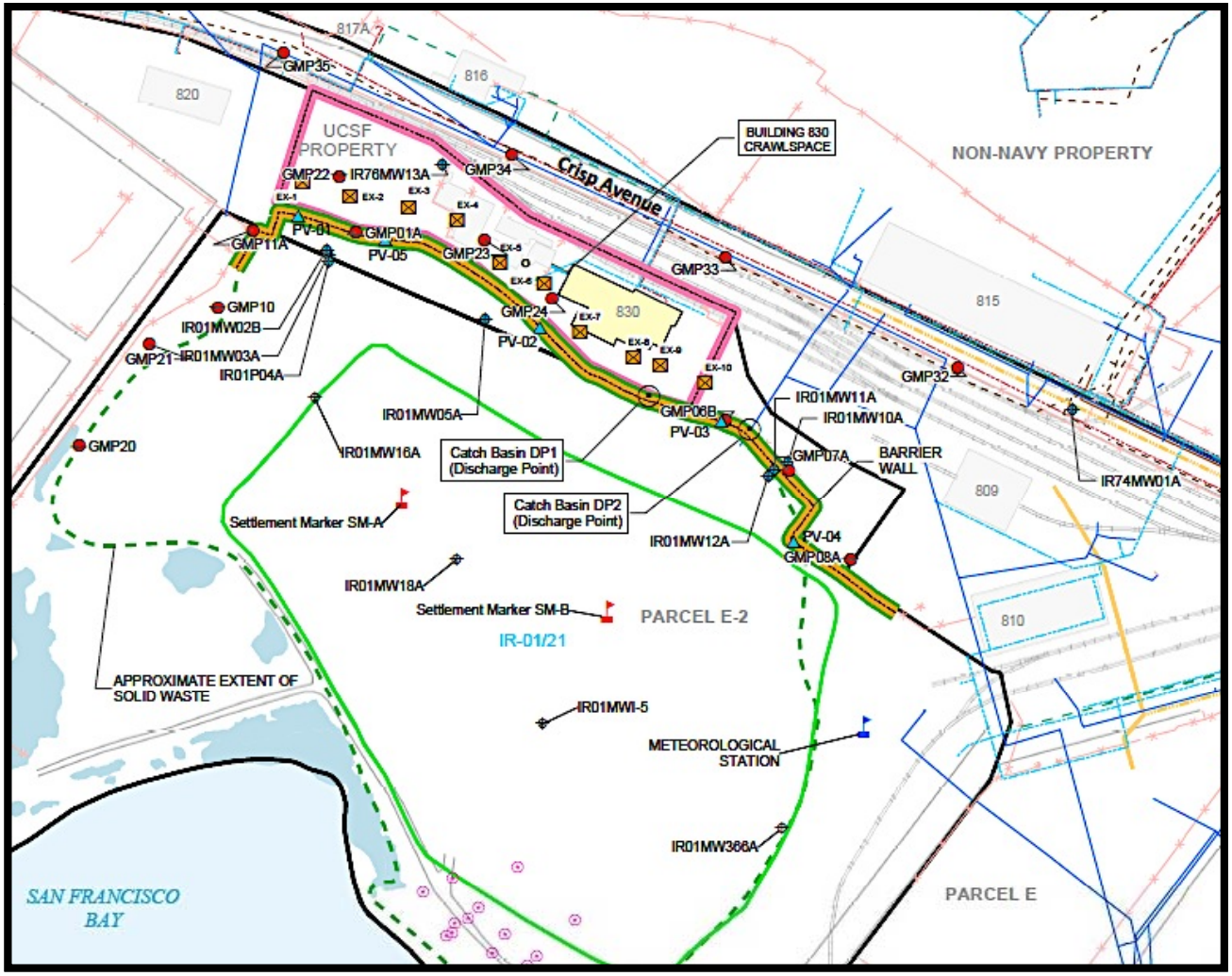
- At this time, the Navy has no recommendations for alternative procedures or instrumentation. The PID continues to be the most available and accepted screening tool for soil vapor VOCs.

- The current field and laboratory methods for LFG monitoring will be reviewed in the RD and alternate procedures will be evaluated.

EPA Recommendation 3 – Navy Response (cont.)

- The Navy will perform additional laboratory analysis on an interim basis
  - Sampling planned for April 2013 at 5 GMPs and 2 PVs
  - Samples will be analyzed by Air Toxics Ltd., the same lab the EPA used for their split sampling event in September 2012
  - Samples will be analyzed for the same constituents; VOCs, NMOCs, TPHs, hydrogen sulfide, atmospheric and organic gases
- The need for further laboratory samples (as part of the interim LFG monitoring program) will be further evaluated

EPA Recommendation 3 – Navy Response (cont.)



Samples will be collected from the following locations:

Landfill
- GMP08A
- GMP10
- PV02 Effluent
- PV03 Effluent

UCSF Property
- GMP23
- GMP24

Property Boundary
- GMP34

Ambient
- Vicinity of GMP10

EPA Recommendation 4

- "It is recommended that the Navy use helium as a leak detection compound at locations GMP23 and GMP24 so that the potential for 2-propanol in ambient air at the UCSF property can be evaluated."

EPA Recommendation 4 – Navy Response

- Helium will be used as a leak detection compound during sample collection (during interim sampling)
- The Navy wishes to clarify that the maximum TO-15 analytical concentration of 2-propanol in the split-samples (0.013 ppmv in GP-24) is well below the most conservative occupational exposure limit (PEL of 400 ppmv) and the most conservative EPA RSL for ambient air (residential RSL of 7.3 mg/m^3 or about 3 ppmv)